Fluidization model for ship manoeuvring prediction in muddy navigation areas

Guillaume Delefortrie
Supervisor(s): Marc Vantorre

The manoeuvring behaviour of vessels is significantly affected by restrictions of the navigation areas. Especially the clearance between the keel and the bottom of the seabed is important. Additional difficulties arise when this bottom is covered with a fluid mud layer. Most vessels are designed to navigate in deep water areas, although for simulation purposes pilots should be able to train with realistic mathematical models in confined areas. A mathematical ship manoeuvring model has been developed taking the under keel clearance and the bottom characteristics into account. Thanks to this mathematical model and simulation runs a redefinition of the nautical bottom in the harbour of Zeebrugge was possible, resulting in the acceptance of larger vessels or a reduction of maintenance dredging.

Broker Architecture for Intelligent Agent Subscription in ICU

Sofie Van Hoecke, Kristof Steurbaut, Filip De Turck, Johan Decruyenaere and Bart Dhoedt
Supervisor(s): Bart Dhoedt

Web services are becoming the standard for integrating heterogeneous software components. In order to support dynamic selection and composition of Web services, based on criteria such as minimization of response time and maximization of fault tolerance, there is a strong need for a service broker architecture. Since the Intensive Care Unit (ICU) is an example of an extremely data-intensive environment, an ICU broker architecture can facilitate the abstraction of relevant information and support the physician through software agents for medical decision support. It is expected that in future ICU systems, tens of agents will be active simultaneously in order to optimize the care of critical ill patients. Therefore the authors present a broker platform offering advanced features such as transparent data migration; user-friendly patient/agent subscription and profile based filtering of support messages. A platform prototype is currently being evaluated by the Department of Intensive Care of the Ghent University.

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